THE HAGUE UNIVERSITY OF APPLIED SCIENCES

KB-74 Presentation

OPSCHALER

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Introduction

The research goal: gas usage prediction on residential houses

- Predict one week ahead
- Predict with a hourly resolution
- Use as less data as possible

Currently predicting on the aggregated level, so groups of houses instead of individual houses.

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Currently used data

Date type: multivariate (tabular) time series

Currently used features:

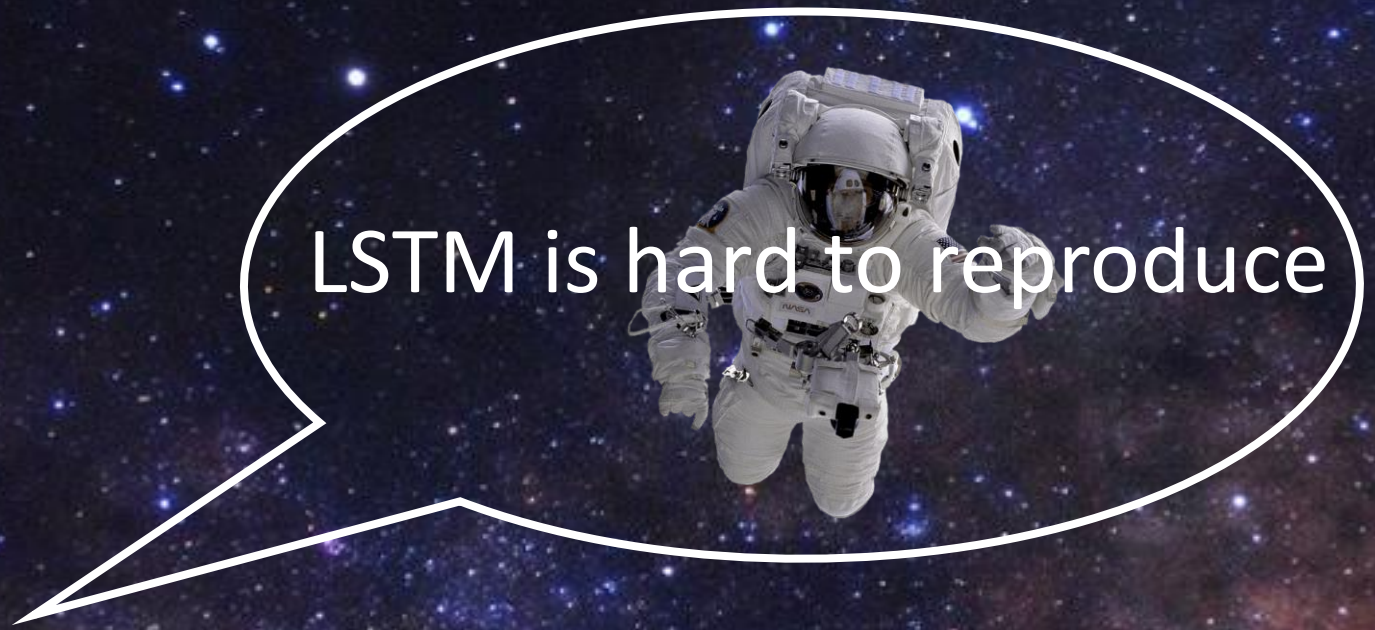
- Power consumption	ePower
- Wind speed	FF
- Rain intensity	RG
- Temperature	T
- Timestamp YYYY:MM:DD HH:MM:SS	datetime

To predict the target:

- Gas consumption	gasPower

The data has a sample rate of one hour.

RNN → LSTM



Results

Model	Frequency	MSE	MAPE (%)	SMAPE (%)	Time per epoch (micro seconds)	Epochs required
DNN	Hourly	0.7	57.1	19.2	4,0	30
	Daily	147.7	29.8	12.3		
LSTM	Hourly	0.7	51.9	25.5	69,0	150
	Daily	79.4	21.5	10.5		
GRU	Hourly	0.7	46.7	25.9	69,0	110
	Daily	87.6	25.1	13.1		
CNN	Hourly	0.8	55.9	26.6	45	14
	Daily	103.9	26.2	12.7		
"Opschaler"	Hourly		41 – 44%		400	150 -200
	Daily		12.5	6.2		

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Current activities

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